

EPOWERTOMORROW : A FORESIGHTING APPROACH FOR IT AND ENERGY ISSUES

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ABSTRACT

The energy consumption of consumer electronics is steadily increasing. In the 1992-1996 period its energy consumption has increased by roughly 50%. Along with this, we are observing an intense development of new products along with new functionality getting the best out of the intelligence embedded in products and their communication functions. There is also a strong increase in the equipment rate of households principally due to the increasing diversity of applications made out of residential electronics, and furthermore, the global drop of components' price and thus the final price of equipment. Consumer electronics that still have a product cycle to go need to be integrated in an energy saving optimisation. This should be done in a way that we would soon be able to control their energy consumption with the intelligence already embedded, since the next generation of equipment with efficient energy saving modes will not be built soon.

ePowerTomorrow is the name for an initiative co-ordinated by the French agency for the environment and energy saving (ADEME). It aims at promoting the creation on an international scale of a recommendation group on the energetic aspects of information technologies development within the household. This group, composed of institutional actors, industrials, research centres, and service companies, will focus particularly on the energetic efficiency of home equipment, on the energetic and environmental impact of e-commerce, on the new energetic service within the residential sector, and on the energy management systems within the household.

Consequently, the ePowerTomorrow initiative is gathering the efforts of European experts in the field of energy and environment so that growing consumer electronics use will not lead to proportionally growing energy consumption. Our first objective is to discuss, among a panel of European experts, the energetic issues of households' equipment and determine the possible evolution of energy consumption of this equipment. Moreover, our initiative is aiming at designing action plans to consider the already embedded intelligence in existing household equipment to enable energy saving functionality (modifying existing products), and to prepare further energy saving standards (developing new products). This action plan should be designed after a watch in the fields concerned to describe the "state of the art" of today's knowledge and technology, which in turn will lead to define and conduct a prospective study that will provide the group with a possible evolution of this "state of the art", in order to enable the group to define the appropriate action plan.

This paper describes ePowerTomorrow through its background, its objectives and its expected results, as well as its working organisation.

KEYWORDS

Energy. Information technologies. Household. Electronics. Foresighting. Electricity.

BACKGROUND

The energy consumption of consumer electronics is steadily increasing. In the 1992-1996 period its energy consumption has increased by roughly 50%. Along with this, we are observing an intense development of new products along with new functionality getting the best out of the intelligence embedded in products and their communication functions. There is also a strong increase in the equipment rate of households principally due to the increasing diversity of applications made out of residential electronics, and furthermore, the global drop of components' price and thus the final price of equipment.

Moreover, one can observe an important evolution worth being noted between households' electronics equipment in the early 80's and the one of year 2000. In the first case, consumer electronics were introduced within the households as luxury goods, and are today embedded in most consumption goods such as hi-fi, entertainment equipment, and white goods.

It is also interesting to note that electricity consumption is the most important cost category within the household overall consumption, which is estimated to have grown from 400 kWh/household/year today, to 1000 kWh/household/year in 2001.

However, in the light of the Kyoto agreement, there is a strong will to reduce carbon dioxide emissions and, consequently, electricity production and consumption. Thus, smart household equipment (consumer electronics) can help achieve these priorities.

Consumer electronics that still have a product cycle to go need to be integrated in an energy saving optimisation. This should be done in a way that we would soon be able to control their energy consumption with the intelligence already embedded, since the next generation of equipment with efficient energy saving modes will not be built soon.

In 2001, ADEME (French Energy & Environment Agency) launched an action to prepare a White Book focusing on the energetic issues of household electronic equipments and the possible evolution of energy consumption in the context of deregulation of markets and introduction of information technologies in devices for energy management(DSM) and provision of services (eCommerce, eServices).

OBJECTIVES

The ePowerTomorrow initiative is aiming at pushing the initiative of ADEME at a European level by gathering the efforts of European experts in the field of electronics, electricity, energy and environment so that growing consumer electronics use will not lead to proportionally growing energy consumption. Starting from a White Book, the first objective is to discuss, among a panel of European experts, the energetic issues of household equipment and determine the possible trends and evolution of energy consumption of this equipment in Europe.

The second objective of ePowerTomorrow Initiative is aiming at designing action plans to consider the already embedded intelligence in existing household equipment to enable energy saving functionality (modifying existing products), and to prepare further energy saving standards to be considered by the developers of new products.

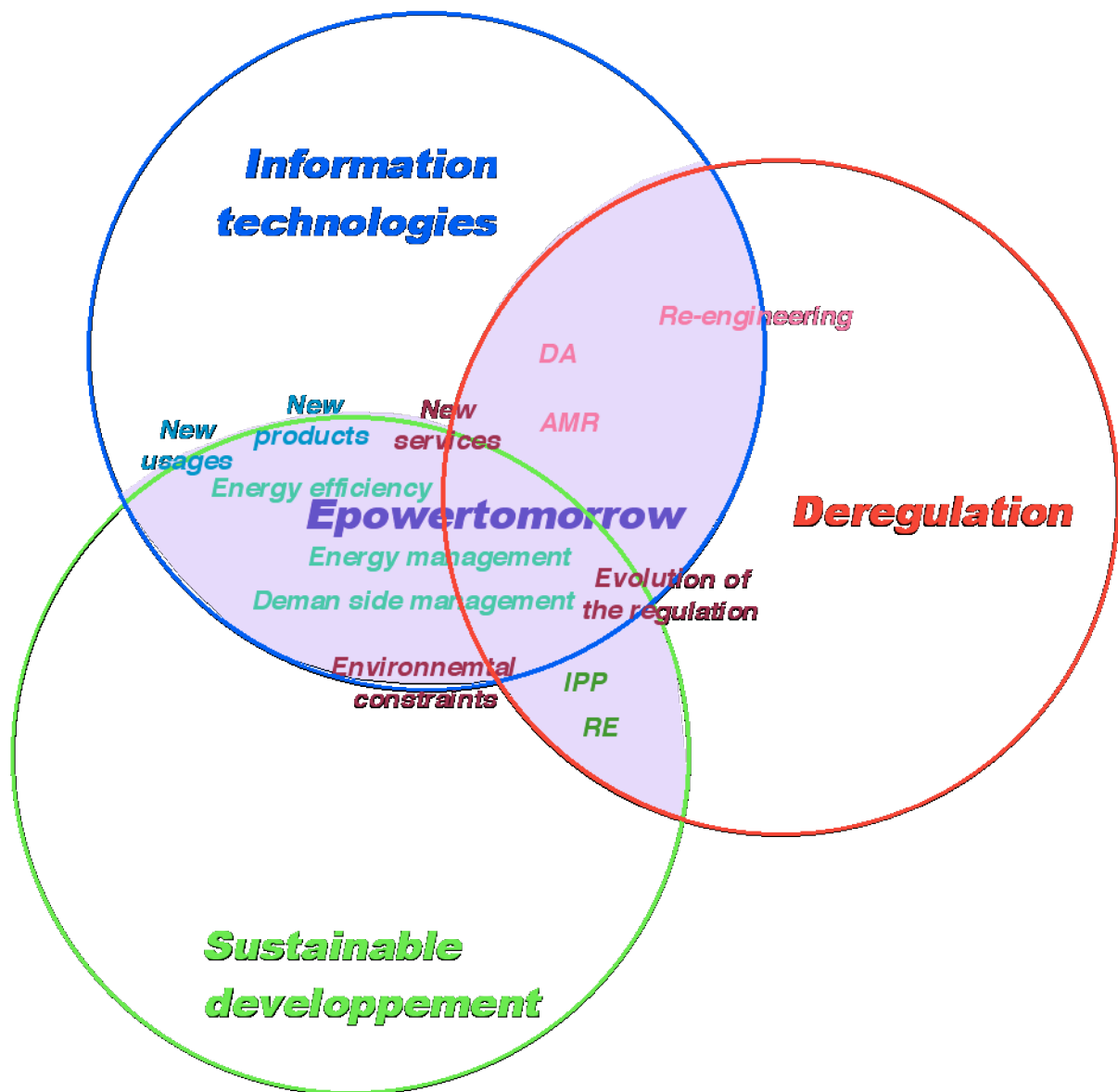


Figure 1 : Context of the energy field

APPROACH AND METHODOLOGY

To achieve these objectives, the ePowerTomorrow Initiative will act successively :

- To create and co-ordinate a network of national partners in Europe gathering various experts in electronics and energetics.
- Based on the content and conclusions of the White Book, to build up the basis of a “country-to-country state of the art” synthesis at the European level. There will be a group of expert for each European country. Each group will be represented at the European level by experts who will report their contributions to the entire ePowerTomorrow Initiative Group.
- To disseminate knowledge and experience. Reporting of experts will be done during a workshop in order to gather information and to discuss the possible orientation of the themes and topics to be worked on.

- From the released version of the White Book, to define a workplan at the European level, in which ePowerTomorrow Initiative partners and experts will have a specific theme to deal with.

Targeted groups

The ePowerTomorrow Initiative would not be efficient without being properly addressed. The consortium has acknowledged the importance of several actors acting together so that energy saving practices really achieves expected results. That is why we have selected the following target groups, to which the initiative results should be communicated and promoted :

- electronic components industry (chips manufacturers)
- electric appliances industry (TV, computer, brown goods manufacturers)
- electricity providers
- telecom operators
- services providers
- professional bodies and organisations
- standardisation bodies
- national regulatory bodies
- building actors
- EC institutions concerned with energy saving and environment care
- European Environment agencies

Building a network of experts

The objective of this first step will be to set up of a panel of European expert groups, that will work on complementary themes, so that synergies are reached in working efficiently with cultural specificity of work groups, and setting up co-ordination schemes among these European groups.

All European partners within the consortium will identify national experts in the field of electronics and energy. Countries to be covered by the study are (at least) : France, Germany, UK, Netherlands, Italy, Denmark, Sweden, Spain. Each country will at least provide a list of minimum 10 experts, equally spread within the group. European partners of the consortium will rely on their networks of experts they have built up the last ten years, through various projects of their own.

Once all experts have been identified, the consortium will manage the organisation of groups such as to reach homogeneity through all Europe, in terms of number of experts within each group, and the speciality they represent. For this, the experts within the list will be contacted so as to ask them their participation in this project. After the acknowledgement of experts (if not enough are participating in each country, we will conduct another search so as to reach to desired number, and quality of the experts), we will organise national groups and nominate a responsible expert for his/her national group. Within each group, we will make sure that 3 experts will represent their group for European meetings.

Release of the White Book

A Release of the White Book will be prepared and distributed to experts and attendants as a contribution and guidelines before the workshop, to be discussed (see below). An updated and amended version will be edited and published after the workshop. It will support the action of the Consortium and the groups of experts to build new detailed projects.

Organization of the workshop

A workshop will be prepared and organised for gathering and analysing information collected by experts.

The first purpose of this workshop is to work on the most important and influents topics in the perspective of building a clear picture of the most probable scenarios of energy saving policy development in the short to medium term.

The second aim of the workshop is to identify subjects that are simultaneously relevant of energy efficiency and Information Technologies concerns and that should be worked more in depth in the frame of national and european programmes such as EC FP6.

Synthesis and dissemination

The objectives of this "final" step will be :

- The elaboration of a European “state-of-the-art” synthesis and recommendations.
- The dissemination of the results towards a target audience, so that it becomes a reference in designing home electronics.
- The support to the expert groups to prepare working activitie and projects

The released version of the White Book should then become available for policy makers at national and european levels, standardisation bodies, industrials that do business with home electronics and IT-based systems, european projects participants where electronics and/or energy saving have a predominant role and of course experts who have participated in the study and who can disseminate through their own research networks.

EXPECTED OUTCOMES AND IMPACTS

Implementing the ePowerTomorrow Initiative will contribute to reach specific expected results/outcomes such as :

- Gathering European member states around action lines developed in the scope of saving energy and thus reducing energy consumption within European households
- Providing an orientation to the continuous development of regulation frameworks concerning the building of electronic components and appliances in the households' context

- Contributing to the elaboration of standards for electronic components that comply to sufficient (levels to be agreed upon) energy saving specifications and electric appliances to energy saving functions, through the feature optimisation of the existing appliances' embedded electronics as well as external modules managing energy use within the household.

On the long term, the ePowerTomorrow Initiative is planned to have an effect on :

- The definition of a frame of reference in elaborating regulations around energy saving practices at the industrial level
- Households awareness of the importance of using electric appliances with energy saving features
- The households' energy consumption in considerably reducing annual averages through the promotion of energy saving electrical appliances and energy saving practices at the household level, and thus guaranteeing the security of energy supplies
- The carbon dioxide emissions that originate mainly from electricity production.